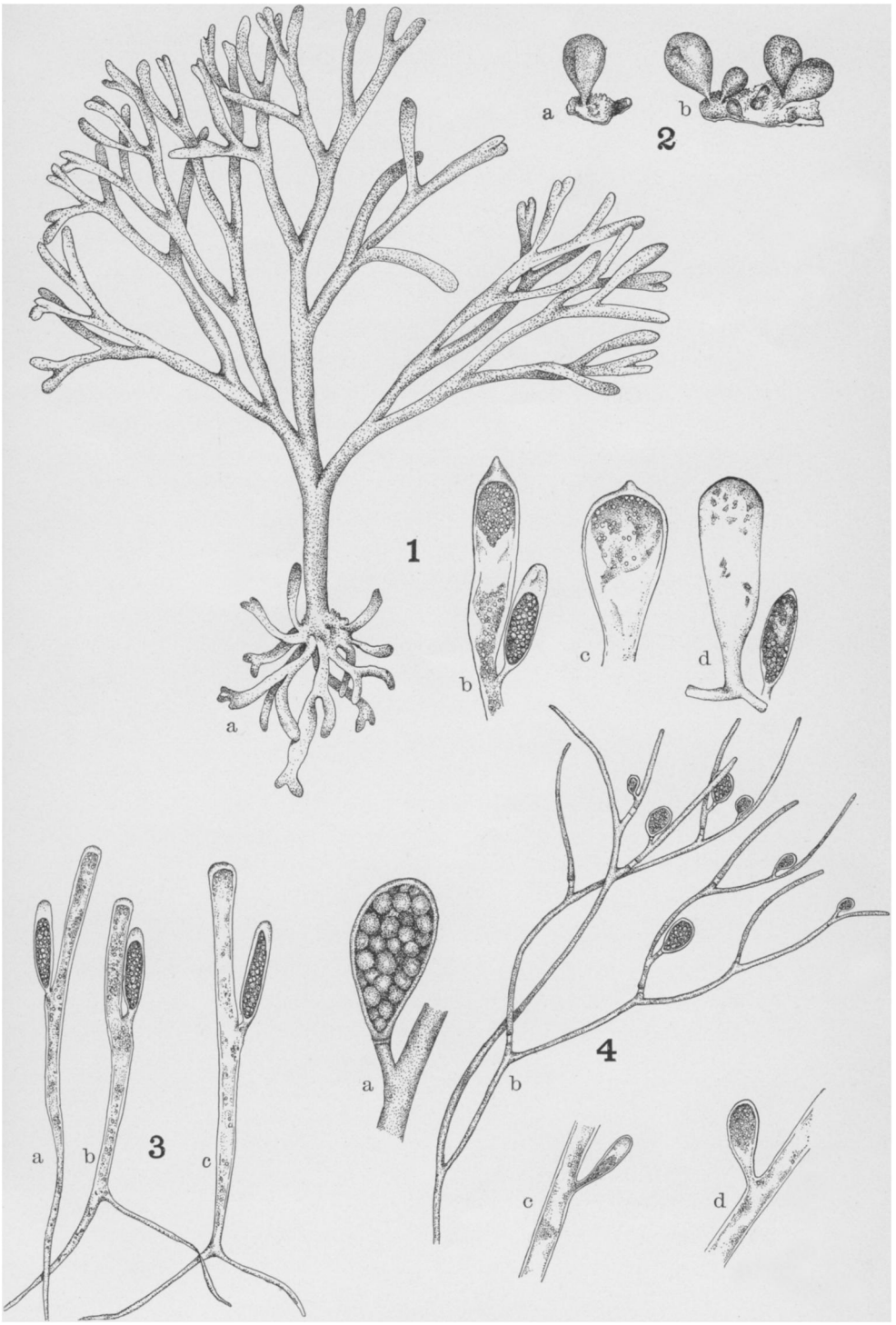

SIPHONEOUS ALGAE OF PACIFIC COAST.

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Four siphoneous Algae of the Pacific Coast

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(PLATE 350.)

CODIUM MUCRONATUM CALIFORNICUM J. Ag. Till Algern. System. VIII., 44.

Pl. 350, fig. 1, a, b and c.

The plant forms rather dense tufts of indefinite extent which are very firmly attached to the rocks by numerous, creeping, rhizoidal filaments. The plant body is erect, dichotomously divided, 1.5–3 dm. high, .5–1 cm. in diameter, of a spongy consistency, composed of a central mass of irregularly branching filaments from which arises a compact mass of unbranched peripheral filaments; the young peripheral filaments are cylindrical, ending in an acute mucron; as the filaments mature they become clavate and the mucron shorter and more obtuse. Figs. 1, *b* and *c*.

The sporangia arise from near the base of the peripheral filaments, are sessile or subsessile, cylindrical or oval, 150–300 μ long and 60–120 μ broad.

This plant has been repeatedly collected on the Pacific coast and almost uniformly referred to *Codium tomentosum* * (Huds.) Stack. The peripheral filaments of the latter species are obtuse or rounded at the end, not at all mucronate and the cell wall is only slightly thickened.† (Fig. 1 *d*.) Moreover the sporangia of

* Harvey, Ner. Bor., 2 : 28, Pacific coast localities only. Harvey, Not. Coll. Alg. made on N. W. coast, 161. Anderson, List, etc.

† Fig. 1, *d*, was drawn from No. 168 of Phyc. Bor. Am. specimen from the coast of Jamaica.

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the true *Codium tomentosum* are elliptical, pointed at both ends, slightly thickened at the apex and shorter—200–290 μ long and broader, 80–140 μ broad—than in *Codium mucronatum Californicum*. Compare Fig. 1, *b*, *c* and *d*.

Recently Miss J. E. Tilden has issued this same species, collected at Vancouver Island, British Columbia.* A fragment of Miss Tilden's specimens were softened and figures 1–6 and *C* were drawn from a microscopical mount of it.

The plant is common all along the Pacific Coast from Sitka as far south at least, as the southern California coast.

CODIUM ADHAERANS (Cabr.) Ag. Spec. Alg. 457. 1820.

Aghardia adhaerans Cabr. in Phys. Sallsk. Arsbr.

Pl. 350, fig. 3, a, b and c.

The plant body of this anomalous species is an irregular, blackish-green, cushion-like, spongy mass from 1 cm. to 2 dm. or more in extent. It consists of a felt-like strongly adherent mass of creeping mycelial, branching filaments 2–8 mm. thick. From the upper part of the creeping filaments arises a mass of unbranched cylindrical or clavate, erect filaments which are 1 mm. or more long, and about 100 μ wide, very obtuse or truncate and slightly thickened at the distal end.

The sporangia are cylindrical, very obtuse, sessile or subsessile, 300–400 μ long and 50 μ wide, borne laterally near the distal end of the erect filaments.

This species is rare or local on the California coast. Collected at Point Pinos (the southern point of Monterey Bay), and at Point Lobos (ten miles south of the last locality); it seems to prefer the under side of overhanging rocks.

VALONIA OVALIS (Lyngb.) Ag. Sp. Alg. 1: 431. 1820.

Gastridium ovale Lyngb. Hydr. Dan. 72. 18. 1819.

Pl. 350, f. 2.

The plant consists of a single-celled obovate, thin-walled, inflated, sessile sack 2–8 mm. high and about as broad.

This delicate little plant was collected for three successive sum-

* Tilden, American Algae, Century III., No. 281.

mers from a single large, flat-topped rock, incrusted by a *Melobesia*, which at the lowest tide stood in a foot of water and was exposed to the direct washing of the waves, Point Lobos (Central California coast). It has previously been reported for the North Atlantic Ocean, Faroe Islands, Northern coast of Norway, and the Santa Cruz Islands.

DERBESIA VAUCHERIAEFORMIS (Harv.) J. Ag. Till. Alg. System VIII., 34.

Chlorodesmis? vaucheriformis Harv. Ner. Bor. An. III., 30. *t. 40. fig. D.*

Pl. 350, f. 4.

The filaments are tufted, light green, 1 cm. or so high, 30–40 μ broad; branches erect, few, 20–30 μ broad, obtuse at the apex, often with a cross-partition or a cuboidal cell near their union with the main filament. The sporangia are elliptical, obovate or pyriform, 140–200 μ long and 50–80 μ wide; zoöspores large, 12–20 in a sporangia.

This species was collected but once, at Point Lobos, the last of June, 1896, in the same locality as the last species. The plant is slightly smaller than the measurement given by Dr. Farlow* for the same species from the Atlantic Coast but agrees in all other particulars. Not only do the sporangial stalks possess a cuboidal cell but either a cuboidal cell or a cross-partition is usually found near the base of the vegetative branches.

In the size of the tufts and the diameter of the vegetative filaments this species is very similar to *Derbesia marina* (Lyngb.) Solier,† which perhaps should be considered as only a form of *D. vaucheriaeformis* as has been shown by Dr. Farlow! The sporangia of *D. marina* according to Solier's figures, are shorter stalked and the sporangia are oblong and elliptical and but little narrowed below. Unfortunately no measurements of the sporangia are given. If the two species should prove to be distinct there is no reason in writing the latter as Dr. Toni‡ has done, *Derbesia marina* (Lyngb.) Kjellman, Ishv. Alg. Fl., for Kjellman in that very monograph writes it *Derbesia marina* (Lyngb.) Solier and cites the article of Solier referred to above.§

*Farlow, Mar. Alg. New Eng. 60.

† Solier, Ann. Sci. Nat., III. 7 : 158, *pl. 9, figs. 1–17.*

‡ De Toni, Syl. Alg. 1 : 426.

§ Kiellman, Ishv. Alg. Fl., 387.

Explanation of Plate 350

FIG. 1, *a*, *b* and *c*. *Codium mucronatum Californicum* J. Ag. *a*, a single plant, reduced one-half. *b*, a young peripheral filament bearing sporangium, × 50. *c*, mature peripheral filament, × 50. *d*, a peripheral filament and sporangium of *Codium tomentosum* (Huds.) Stack.

FIG. 2. *Valonia ovalis* (Lyngb.) Ag., × 2. Attached to a *Melobesia*.

FIG. 3, *a*, *b* and *c*. Peripheral filaments bearing sporangia of *Codium adhaerans* (Cabe) Ag., × 50.

FIG. 4. *Derbesia vaucheriaeforme* (Harv.) J. Ag. *b*, a filament, × 20. *c* and *d*, early stage in the development of the sporangium, × 350. *d*, a mature sporangium showing zoöspore, × 350.

The figures were drawn by Miss Emma Williams.